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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/852,921	05/10/2001	Philipp Steinmann	TI-29881	5844

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TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER

DEO, DUY VU NGUYEN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 05/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/852,921

Applicant(s)

STEINMANN ET AL.

Examiner

DuyVu n Deo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1 and 8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not shown where in the specification teaching of etching the metal stack and resistor material to form a plurality of metal lines in addition to and separate from a thin film resistor area.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 8 are vague because it is unclear how the metal lines are formed so that they are in addition to and separate from a thin film resistor area.

5. Claim 1 recites the limitation "a thin film resistor" in lines 8, 9. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 8 recites the limitation "said thin film resistor" in line 7. There is insufficient antecedent basis for this limitation in the claim.

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Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3, 7 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ishii (US 5,422,307).

Ishii describes a fabrication method for an integrated circuit comprising: forming an interlevel dielectric 211 over a substrate; forming a layer of resistor material 212 over the dielectric layer; forming a metal stack, 213 and 214, on the resistor material; forming a first pattern over the metal stack; etching the metal stack and resistor material using the first pattern; forming a second pattern to expose a portion of the metal stack over the thin film resistor; removing the exposed portion of the metal stack to form a thin film resistor (col. 9, line 56-col. 10, line 59). Even though Ishii is silent about removing the first pattern, it would be obvious to remove the first pattern so that second pattern can be applied on the substrate for etching. Figures 14B-C shows the first pattern is removed. Since his method comprises the same steps as

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that of claimed invention, the metal lines that formed would also be inherently in addition to and separate from a thin film resistor area.

Even if this is not the case; however, because there is always more than one metal line formed during the fabrication of an integrated circuit, it would have been obvious to one skilled in the art to form the metal lines in addition to and separate from a thin film resistor in order to form interconnection with a reasonable expectation of success.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii as applied to claim 1 above, and further in view of Morris (US 5,485,138).

Unlike claimed invention, Ishii is silent about the dielectric layer having vias formed at the surface thereof. However, it is well known to one skill in the art as shown here by Morris to form vias in the dielectric layer so that the resistor can be interconnect to other parts of the integrated circuit.

11. Claims 8-10, 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii, Linn, and Morris.

Unlike claimed invention, Ishii doesn't describe removing the exposed portion of the metal stack using wet etch. However, wet etch is well known to one skill in the art for etching metal above resistor material as shown here by Linn (col. 3, line 65-col. 4, line 4) as long as the metal is etched without affect the resistor material as taught by Linn with an expected result.

The step of forming a second interlevel dielectric layer over the metal lines ad thin film resistor would be obvious as shown by Morris (col. 4, line 13-20) in order to protect the resistor from the subsequent process.

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Ishii is silent about the dielectric layer having vias formed at the surface thereof.

However, it is well known to one skill in the art as shown here by Morris to form vias in the dielectric layer so that the resistor can be interconnect to other parts of the integrated circuit.

12. Claims 4, 5, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii or Ishii/Linn/Morris as applied to claims 1 and 8 above, and further in view of admitted prior art.

Referring to claims 4, 5, and 11 using a hardmask, such as silicon dioxide or other, to etch the metal stack is well known to one skilled in the art as long as it can provide a pattern for etching with an expected result as described in page 7, line 25-30.

Response to Arguments

13. Referring to applicant's argument about 112 rejection of claims 1 and 8, the first etching mask etches both the resistor material 62 and metal lines 70 as shown in figure 2D; therefore, the metal lines are not formed in addition to and separate from a thin film resistor area or thin film resistor. Since the metal lines are formed at the same time as the thin film resistor, they are formed in the thin film resistor area and not separate from the thin film resistor.

Referring to applicant's argument that Ishii doesn't describe the metal lines are in addition and separate from the thin film resistor area because the metal lines would only be formed if the pattern for the etch was modified. It is obviously shown in figure 14C by Ishii that the pattern mask is modified to form a different wiring (metal lines).

Referring to applicant's argument that there is no disclosure or suggestion that this metal stack is part of a metal interconnect level. The wirings formed by Ishii are made up of metal and it is used for wiring or electrically connect to the resistor (col. 10, line 31-38). Wouldn't that be for interconnection?

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Conclusion

4. This is a continuation of applicant's earlier Application No. 09/852921. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n Deo whose telephone number is 703-305-0515.

DVD
May 12, 2003


BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700